

Remarks

This paper is responsive to the outstanding non-final Office Action mailed September 29, 2005. Claims 1-30 are pending in this application and currently stand rejected. Applicants have amended claims 1, 2, 4, 5, 7, 8, 15-17, 19, 21-27, 29, and 30; canceled claims 6 and 28; and appended new claims 31-33. Upon entry of this paper, claims 1-5, 7-27, and 29-33 will remain pending in this application. Claims 2-5, 7-16, and 31 are dependent on independent claim 1; claims 18-27 and 32 are dependent on independent claim 17; and claims 29 and 30 are dependent on newly added independent claim 33.

Claim Rejections - 35 U.S.C. § 102 (a) or (e)

Claims 1-4, 6-8, 10-19, and 21-30 were rejected under 35 U.S.C. § 102 (a) or (e) as being anticipated by Frink (US Patent Application Publication 2004/0261780). The Examiner states that Frink shows all of the limitations claimed in the present application for a fireplace/display including, among other things, a burner 10, a combustion chamber, a fan/blower capable of modulating pulsed air, a glass cylinder 240, and a gas valve 20 that acts as a combustion control member. The Examiner also indicates that the ignition system is inherent.

Applicants have amended independent claim 1 to now recite:

1. A fire display device, comprising:
 - a fresh air assembly providing a primary and a secondary air stream;
 - a burner assembly configured to premix the primary air stream with a combustible fluid and comprising a burner configured to produce a flame having a flame path;
 - a combustion chamber enclosure configured to enclose the flame; and
 - a secondary air assembly configured to change the flame path by directing the secondary air stream towards the flame.

Accordingly, fresh air entering the device of the present invention constitutes two air streams – a primary air stream and a secondary air stream. In contrast thereto, the fresh air in Frink's device is a single undivided stream of air.

In the device of the present invention, the primary air stream enters the burner assembly wherein it premixes with the combustible fluid before being burnt at the burner in the combustion chamber. As is well known in the art, premixing will result in a substantially more complete combustion relative to a combustion without premixing such as in Frink's device. Also, in addition to

effectuating the path, shape, and size of the flame in the combustion chamber of the present invention, a relatively small fraction of the secondary air stream will be used for burning any access combustible fluid. However, because Frink's device does not specifically enable premixing, the primary combustion at the burner will be incomplete, and a relatively large fraction of the air entering the combustion chamber will be used for burning the access combustible fluid remaining in the combustion chamber.

For at least these reasons, Applicants respectfully submit that Frink does not anticipate the device of the present invention. In view thereof, amended claim 1 of the present invention is believed allowable over Frink. Furthermore, claims 2-4, 7, 8, and 10-16, and newly added claim 31, all of which are dependent on claim 1, are also believed allowable since they merely impose additional limitations to independent claim 1.

Claim 6 has been canceled.

Applicants have amended independent claim 17, which now recites:

17. A method of altering the path of a flame, the method comprising the steps of:
 - providing a primary and a secondary air stream;
 - premixing the primary air stream with a combustible fluid before being ignited;
 - producing a flame in a burner assembly, the flame having a flame path enclosed in a combustion chamber enclosure; and
 - altering the flame path by directing the secondary air stream towards the flame.

As can be seen, the method of altering the path of a flame in accordance with the device of the present invention includes distinguishing the fresh air entering the device as two air streams – a primary air stream and a secondary air stream. Clearly, Frink does not provide, nor does he see the need for, distinguishing the fresh air entering the device as two air streams. The method of the present invention enables premixing, in the burner assembly, the primary air stream with the combustible fluid before burning the mixture at the burner in the combustion chamber. As is well known in the art, premixing will result in a substantially more complete combustion relative to a combustion without premixing such as in Frink's device. Also, in addition to effectuating the path, shape, and size of the flame in the combustion chamber of the present invention, a relatively small fraction of the secondary air stream will be used for burning any access combustible fluid. However, because Frink's device does not specifically enable premixing, the primary combustion at the burner

will be incomplete, and a relatively large fraction of the air entering the combustion chamber will be used for burning the access combustible fluid remaining in the combustion chamber.

For at least these reasons, Applicants respectfully submit that Frink does not anticipate the method of the present invention. In view thereof, amended claim 17 of the present invention is believed allowable over Frink. Furthermore, claims 18, 19, and 21-27, and newly added claim 32, all of which are dependent on claim 17, are also believed allowable since they merely impose additional limitations to independent claim 17.

Newly presented claim 33 recites:

33. A fireplace assembly, comprising:
a fresh air assembly providing a primary and a secondary air stream;
a burner assembly comprising a burner configured to ignite a mixture of the primary air stream and a combustible fluid and produce a flame in a combustion chamber; and
a secondary air assembly configured to direct the secondary air stream into the combustion chamber.

As previously discussed in reference to amended claim 1, Applicants respectfully submit that at least for those same reasons, newly presented claim 33 is also not anticipated by Frink, and is allowable in its present form. Applicants have amended claims 29 and 30 to render them compatible with newly presented claim 33. Amended claims 29 and 30, being dependent on claim 33, are also believed allowable since they merely impose additional limitations to independent claim 33.

Claim 28 has been canceled.

In view of the foregoing, reconsideration and withdrawal of the rejections under 35 U.S.C. § 102 (a) or (e) is respectfully solicited.

Claim Rejections - 35 U.S.C. §§ 102/103

Claims 1, 8, 10, 14, 17, 19, 20, 23, and 24 were rejected under 35 U.S.C. §§ 102/103 as being anticipated by Gazco (Great Britain Patent 2,293,875), Matsushita (Japan Patent 59,097,416), Ecological (US Patent 3,685,946), Nabisco (US Patent 4,786,247), Hamilton (Great Britain Patent 387,751), and International Combustion Engineering (ICE) (US Patent 1,734,669) as applied in the Applicants' Great Britain Patent Application 503,0003.6. In so doing, the Examiner's reasons for the rejections of claims 1, 8, 10, 14, 17, 19, 20, 23, and 24 are those indicated in the Search Report by the British Examiner (date of search: June 21, 2005).

Claims 1, 8, 10, 14, 17, 23, and 24 were rejected under 35 U.S.C. §§ 102/103 as being anticipated by Gazco (Great Britain Patent 2,293,875). The search report states that Gazco discloses a decorative fuel-effect gas fire wherein the secondary air flow, via ducts 22, changes the appearance of the flame immediately adjacent to the ducts, resulting in taller flames.

In both the first paragraph starting on page 2 and in the last paragraph on page 4, Gazco teaches that the flame immediately adjacent to the ducts is virtually colorless. Furthermore, in the regions between the ducts, the flames are taller and of a distinct yellow color. This effect on the flames is inherent in Gazco's design, and no additional means are provided for creating flames having different shapes and sizes. In contrast thereto, the device of the present invention includes a secondary air assembly which effectuates the appearance of the flame, such as creating a pulsating flame, a short and stubby flame, a tall and thin flame, a swirling or twisting flame, etc. Clearly, Gazco neither operates as, nor is it capable of, creating flames of different paths, shapes, and sizes. Therefore, at least for these reasons, Applicants respectfully submit that independent claims 1 and 17, even in their currently amended form, are not anticipated by Gazco. Furthermore, claims 8, 10, and 14, all of which are dependent on claim 1, and claims 23 and 24, both of which depend on claim 17, are also deemed not anticipated by Gazco and therefore allowable.

Claims 17 and 19 were rejected under 35 U.S.C. §§ 102/103 as being anticipated by Matsushita (Japan Patent 59,097,416). The search report states that Matsushita discloses a burner arranged in a combustion chamber wherein the flame length is shortened by impingement of a secondary air flow directed from blower 9'. Having reviewed Matsushita, Applicants respectfully submit that claims 17 and 19 of the present invention are not anticipated by Matsushita.

Matsushita teaches that "...the secondary air is jetted out of a secondary air jetting orifice 6..." such that "...the secondary air is forcibly jetted out...and impinges against a flame, and thereby significantly shortening the flame length and consequently eliminating the need of large space for the combustion chamber 7." As stated, the secondary air flow in Matsushita's device merely shortens the flame for reducing the size of the combustion chamber, and clearly can not create a flame of any shape and/or size as is possible with the present invention. As discussed in the foregoing, the device of the present invention includes a secondary air assembly which effectuates the appearance of the flame, such as creating a pulsating flame, a short and stubby flame, a tall and thin flame, a swirling or twisting flame, etc. Therefore, at least for these reasons, Applicants respectfully submit that

independent claim 17 and claim 19 dependent thereon, even in their currently amended form, are not anticipated by Matsushita, and are both believed allowable in their currently amended form.

Claims 17, 19, 20, and 23 were rejected under 35 U.S.C. §§ 102/103 as being anticipated by Ecological (US Patent 3,685,946). Ecological teaches a combustion chamber arrangement including a fan which forces secondary air into the chamber to compress the flame and reduce the flame size.

Once again, Applicants respectfully submit that Ecological does not anticipate the claims of the present invention in several categories. In the first instance, the present invention includes a secondary air assembly which effectuates the appearance of the flame, such as creating a pulsating flame, a short and stubby flame, a tall and thin flame, a swirling or twisting flame, etc. Clearly, this is not possible with Ecological's device. In the second instance, impinging the secondary air under high pressure onto the flame envelope, as taught by Ecological, will create a void in the flame envelope. The size and shape of this void in the flame envelope will be determined by the velocity of the secondary air – the void may be bowl-shaped under relatively low flow velocities, and the void may form in the shape of a cone under relatively high flow velocities. Furthermore, if the velocity of the secondary air impinging the flame envelope is sufficiently high, then the void may become cylindrical-shaped whereby the base of the flame will be separated from the burner and the combustion process potentially diverted to the periphery of the combustion chamber. Clearly, no such void of any shape and/or size is possible in the present invention. Therefore, Applicants respectfully submit that independent claim 17 and claims 19, 20, and 23 dependent thereon are not anticipated by Ecological and are therefore allowable.

Claim 17 was rejected under 35 U.S.C. §§ 102/103 as being anticipated by Nabisco (US Patent 4,786,247), Hamilton (Great Britain Patent 387,751), and ICE (US Patent 1,734,669). Nabisco teaches a burner within a combustion chamber of an oven, wherein the burner has streams of air issuing from two rows of air apertures 68 and 70, which are inclined inwardly towards the gas stream, thereby lengthening the ribbon flame produced by the burner. Hamilton discloses a burner within a combustion chamber and an associated jet of air that alters (envelopes) the flame. ICE teaches a combustion chamber including a flame path which is turned by an air barrage emitting from nozzle 6.

In each one of the patents to Nabisco, Hamilton, and ICE, the secondary air is forced into the combustion chamber by a fan/blower. Additionally, the secondary air flows through apertures such

as 68 and 70 in Nabisco or through nozzles, orifices, etc. As has been previously discussed, several drawbacks are associated with the use of a fan/blower, nozzles, orifices, etc. for forcing the secondary air into the combustion chamber in the manner taught by Nabisco, Hamilton, and ICE. For instance, the position of the flame and its base relative to the burner, the size and shape of the flame, etc., will all be effectuated by the fan induced flow velocity of the secondary air.

The present invention teaches a secondary air assembly which effectuates the appearance of the flame, such as creating a pulsating flame, a short and stubby flame, a tall and thin flame, a swirling or twisting flame, etc. Clearly, this is not possible in the device of either one of Nabisco, Hamilton, or ICE. At least for these reasons, Applicants respectfully submit that independent claim 17, even in its currently amended form, is not anticipated by either one of Nabisco, Hamilton, or ICE, and is therefore believed allowable in its currently amended form.

In view of the foregoing, reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102/103 is respectfully solicited.

Claim Rejections - 35 U.S.C. § 103

Claims 1-3, 6-8, 10-14, 17, 18, 23-25, 28, and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hannebaum (US Patent 3,499,432) in view of Fleming (US Patent 5,678,534). Hannebaum discloses a fireplace housing including, among other things, a source of fluid 18 providing rotating fluid flow (FIG. 1). Fleming teaches a fire display/fireplace including artificial embers 30 and gas fuel nozzle 5 to provide an aesthetically pleasing effect. Accordingly, the Examiner determined that it would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the burner and artificial embers of Fleming into the invention disclosed by Hannebaum so as to provide a more efficient and aesthetically pleasing effect.

Applicants respectfully disagree with the Examiner's determination. Hannebaum's device includes, among other things, "A generally horizontal hollow vent tube 18 open at both ends..." extending "...inwardly to the interior of the box from the outside." (col. 1, lines 62-64) wherein the "...openings can be manually adjusted to vary the area of the vent." (col. 1, lines 68-69). As can be seen from FIG. 1 in Hannebaum, the rotation of the flame will be effected by both the angle at which vent tube 18 is inserted and the manually adjustable open area of the vent. Placing

vent tube 18 with its distal end/opening along the inside circumference of the “Side Winder” will result in a flame with rotational characteristics substantially different then that resulting from placing the distal opening away from the inside circumference. Additionally, the flow rate at which air will enter the “Side Winder” will be determined by both the intensity of the buoyancy forces and the manually adjustable open area of vent tube 18, and will further impact the rotational characteristics of the flame.

In contrast thereto, the present invention does not utilize a device such as vent tube 18 for effectuating the rotation of the flame and/or for manually varying the flow rate of the secondary air entering the combustion chamber. In the present invention, as has been previously discussed, the flame twist/swirl is effectuated by the secondary air assembly. The inclusion or exclusion of decorative embers, such as those suggested by Fleming, may further impact, albeit differently, the characteristic of the flames of the present invention and also the flames of Hannebaum’s device.

Therefore, at least for the foregoing reasons, Applicants respectfully submit that each independent claim 1 and 17, even in their currently amended form, are patentable over Hannebaum both individually and in view of Fleming. Additionally, newly presented claim 33 is also deemed patentable over Hannebaum both individually and in view of Fleming. Therefore, Applicants believe dependent claims 2, 3, 7, 8, 10-14, 18, 23-25, and 30 are allowable over Hannebaum both individually and in view of Fleming.

Claims 6 and 28 have been canceled.

Claims 5, 9, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Frink (US Patent Application Publication 2004/0261780) or Hannebaum (US Patent 3,499,432) in view of Fleming (US Patent 5,678,534). The Examiner states that the functional equivalence and interchangeability of a compressed fluid and blower is old and well know in the art, and that providing a light source in a fireplace is also old and well know in the art.

Claims 5 and 9 are dependents of independent claim 1, and claim 20 is dependent on independent claim 17. The patentability of currently amended independent claims 1 and 17 over Frink, and also over Hannebaum in view of Fleming has been extensively discussed in the foregoing. Since a dependent claim merely imposes additional limitations to the independent claim from which

it depends, Applicants respectfully submit that claims 5, 9, and 20 are also patentable over Frink and also over Hannebaum in view of Fleming.

In view of the foregoing, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully solicited.

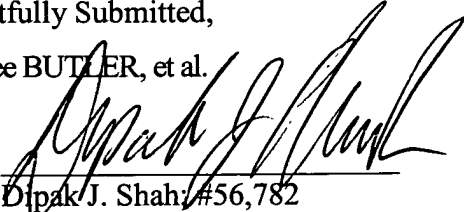
Conclusion

Upon entry of this paper, claims 1-5, 7-27, and 29-33 will be pending in the present patent application. The pending claims are believed to be in condition for allowance. Reconsideration to that end and prompt passage of the application to allowance is respectfully solicited.

Respectfully Submitted,

Gary Lee BUTLER, et al.

By:



Dipak J. Shah, #56,782
FAEGRE & BENSON LLP
2200 Wells Fargo Center
90 South Seventh Street
Minneapolis, MN 55402-3901
612/766-7217

Dated: January 12, 2006

M2:20763862.02